

Troubleshooting Guide: Microsoft Windows ActiveSync® with UMR Series-5

Application Note AN107 – Rev 1.1, 10th Feb 2009

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2. Revision Information

S.No.	Author	Revision, Date	Comments
1	P.Reast	REV 1.0, 04 th Jan 2009	Initial Release for ActiveSync Debug
2	P.Reast	REV 1.1, 10 th Feb 2009	Added step 9 in Section 7.0

This document applies to the UMR X10 and UMR 5 Series:

Legacy Part Numbering Scheme:

UMRX10-A35	PXA270 processor (312MHz), short-board, 3.5" VGA display
UMRX10-C35	PXA270 processor (520MHz), short-board, 3.5" VGA display
UMRX10-B35	PXA270 processor (312MHz), long-board, 3.5" VGA display
UMRX10-D35	PXA270 processor (520MHz), long-board, 3.5" VGA display
UMRX10-A70	PXA270 processor (312MHz), short-board, 7.0" WVGA display
UMRX10-C70	PXA270 processor (520MHz), short-board, 7.0" WVGA display
UMRX10-B70	PXA270 processor (312MHz), long-board, 7.0" WVGA display
UMRX10-D70	PXA270 processor (520MHz), long-board, 7.0" WVGA display
EVK-UMRX10-xxx	Development Kit for the UMR-X10

New Part Numbering Scheme:

EVKX5-A035A0100	PXA270 processor (312MHz), short-board, 3.5" VGA display
EVKX5-A135A0100	PXA270 processor (312MHz), long-board, 3.5" VGA display
EVKX5-B035A0100	PXA270 processor (520MHz), short-board, 3.5" VGA display
EVKX5-B135A0100	PXA270 processor (520MHz), long-board, 3.5" VGA display
UMRX5-A035A0100	PXA270 processor (312MHz), short-board, 3.5" VGA display
UMRX5-A135A0100	PXA270 processor (312MHz), long-board, 3.5" VGA display
UMRX5-B035A0100	PXA270 processor (520MHz), short-board, 3.5" VGA display
UMRX5-B135A0100	PXA270 processor (520MHz), long-board, 3.5" VGA display
UMRX5-D170A0100	PXA270 processor (520MHz), long-board, 7.0" WVGA display

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3. Introduction

Microsoft ActiveSync® is a data synchronization tool developed by Microsoft for use with its Windows line of operating systems. The utility provides users a communication medium between a host workstation and target device, using either standard asynchronous serial or USB communications. ActiveSync also offers a seamless link into the UMR integrated development environment of Visual Studio and Embedded Visual C++. The UMR series has been developed and verified using the current ActiveSync version 4.5 and the legacy v3.8. The v.4.5 release is referenced throughout this application note; however any differences in appearance/procedures for ActiveSync v3.8 are noted where applicable. Note; functional differences between the two ActiveSync releases are listed in Appendix C.

4. Target configuration

Since ActiveSync operates using either conventional asynchronous serial communications or USB, the user must set up the UMR according to the chosen medium.

Using a null modem cable attached a host PC and UMR console port (normally COM1), boot the target to the boot-loader (ARMon) command line, as described in Section 5.0 in AN109.

4.1. Boot-Loader Configuration for ActiveSync USB connection

Given that the USB slave port on the PMA-270 is commonly assigned to the manufacturing link utility at boot-up, the port needs to be released to ensure ActiveSync will be able to occupy the channel when running the WinCE operating system.

Using the 'setupinfo' command, verify the boot loader configuration parameters, as shown in Figure 1.0:

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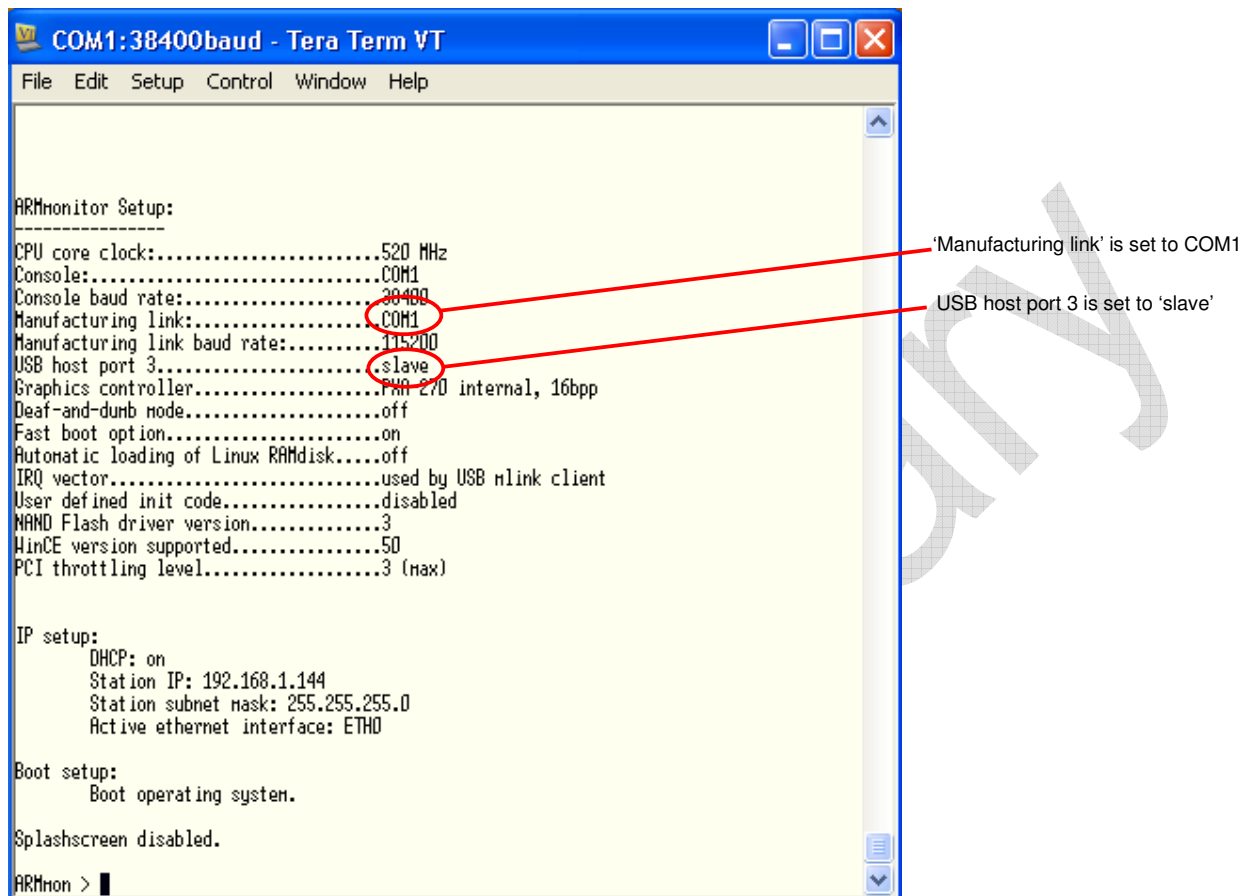


Figure 1.0: ARMon setup for USB connection

Ensure that the manufacturing link is NOT set to 'usb' and that USB host port 3 is set to 'slave'.

```
ARMmon > mlink com1
Setting manufacturing link to COM1.
```

```
ARMmon > usb3mode slave
USB port 3 set to slave mode.
```

4.2. Boot-Loader Configuration for ActiveSync serial connection

Only the 'COM1' serial communications channel on the PMA-270 offers the fully handshaking signalling required for the ActiveSync tool. Hence, this port needs to be freed up from the boot-loader console in order for the AS utility to occupy the channel.

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Using the 'setupinfo' command, verify the boot loader configuration parameters, as shown in Figure 1.1:

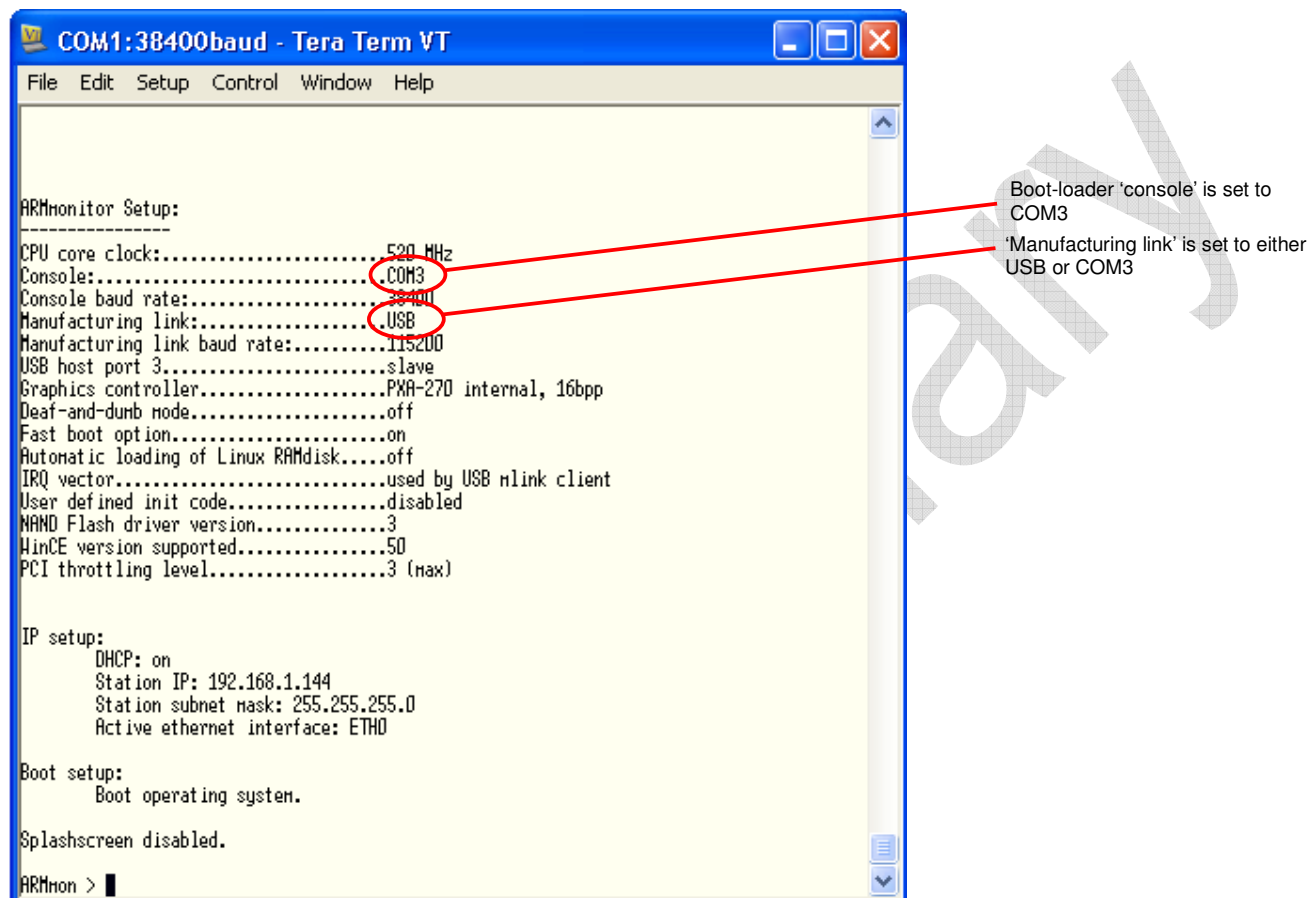


Figure 1.1: ARMmon setup for serial connection

Ensure that the console is NOT set to 'com1' and that m-link is set to 'usb'.

```
ARMmon > mlink usb
Setting manufacturing link to USB.
```

```
ARMmon > console com3
Setting console to COM3.
```

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4.3. WINCE Configuration for ActiveSync USB Connection

Since ActiveSync utilises TCP ports to communicate with the UMR, the data link can be thought of as a network connection and as such, the user must stipulate the ActiveSync connection medium on the target.

As shown in Figure 1.2 and detailed in the steps below, the 'ConnforMsASync' device is configured for the USB connection.

1. On the target UMR: Click 'Start'
2. Click 'Settings'
3. Click 'Network and Dial-up connections'
4. Click 'ConnforMsASync' (not double click, only highlight)
5. Click 'File'
6. Click 'Properties'
7. Under 'Select a device' - select 'USB Cable' from the drop down menu
8. Click 'OK'

Note, since there is no 'Apply' button on the Properties dialogue, it is important to click 'Ok' on each parameter modification

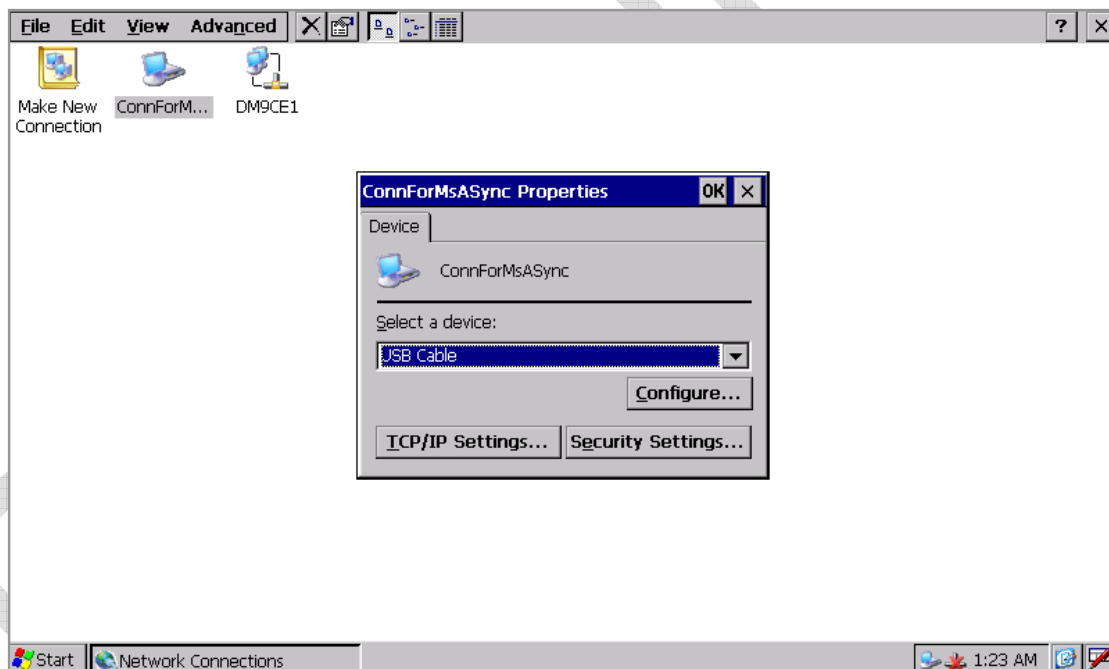


Figure 1.2: ActiveSync USB connection Properties

Although *flow control* is normally associated with conventional asynchronous serial communications, the Windows driver for USB ActiveSync mimics a serial port. To ensure the USB device is recognised by the host workstation, ensure the 'Flow control' is set to 'None' as shown in Figure 1.3.

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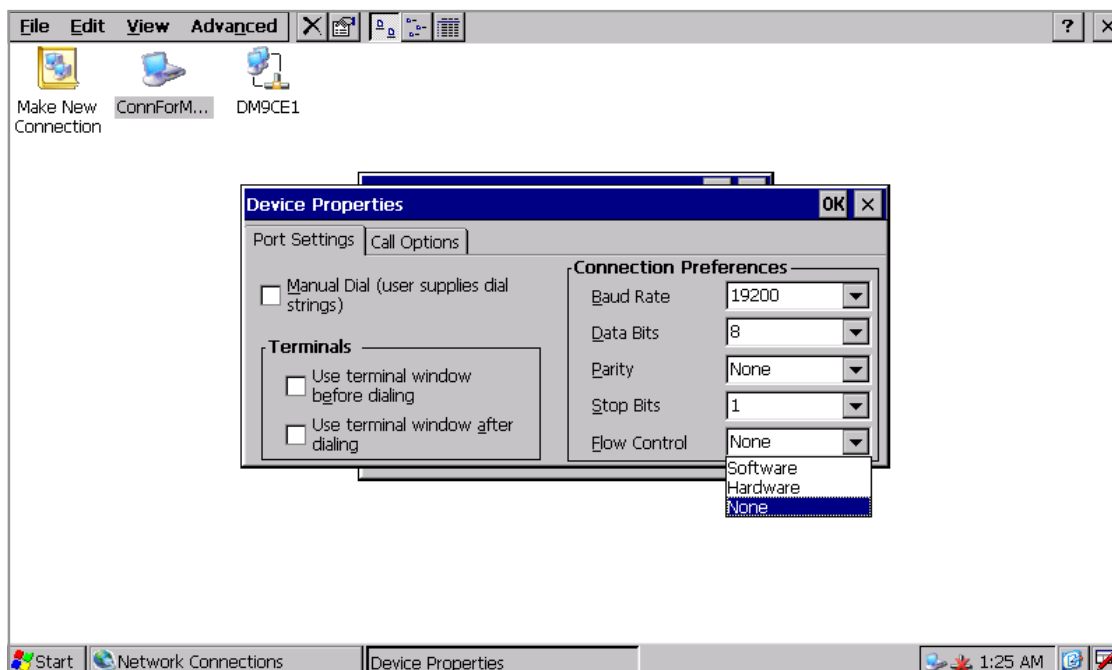


Figure 1.3: ActiveSync USB connection Properties

4.4. WINCE Configuration for ActiveSync COM1 Connection

As shown in Figure 1.4 and detailed in the steps below, the 'ConnforMsASync' device is configured for the serial connection.

1. On the target UMR: Click 'Start'
2. Click 'Settings'
3. Click 'Network and Dial-up connections'
4. Click 'ConnforMsASync' (not double click, only highlight)
5. Click 'File'
6. Click 'Properties'
7. Under 'Select a device' - select 'Serial Cable on COMA' from the drop down menu
8. Click 'OK'

Note, since there is no 'Apply' button on the Properties dialogue, it is important to click 'Ok' on each parameter modification

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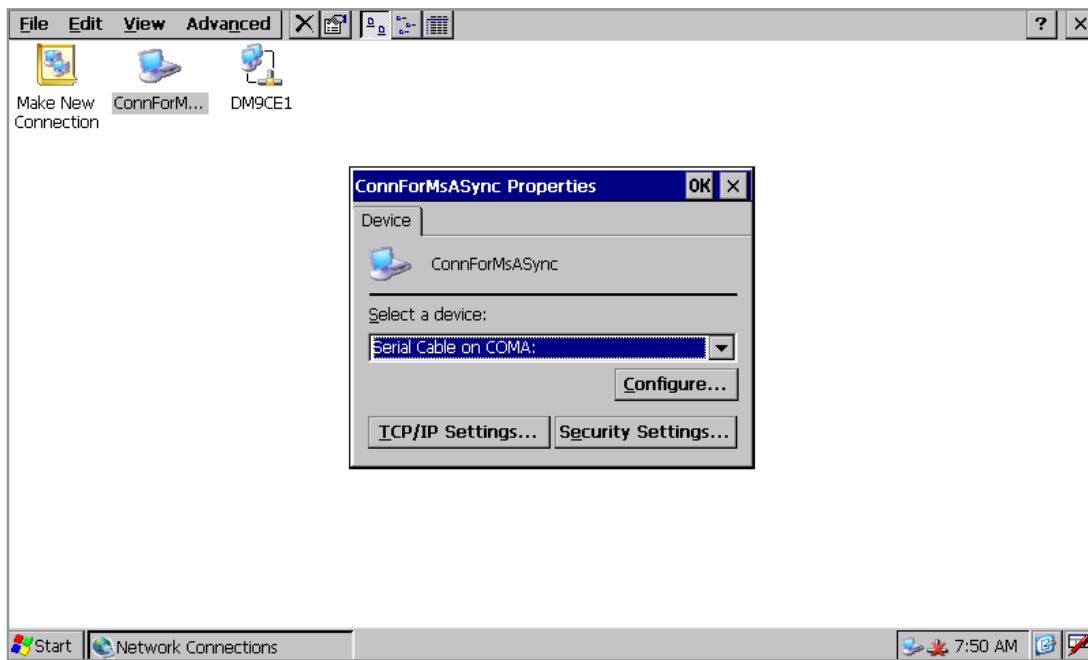


Figure 1.4: ActiveSync Serial Port connection Properties

Ensure the port is configured with the following serial parameters: 19200/8/none/1/none, as shown in Figure 1.5.

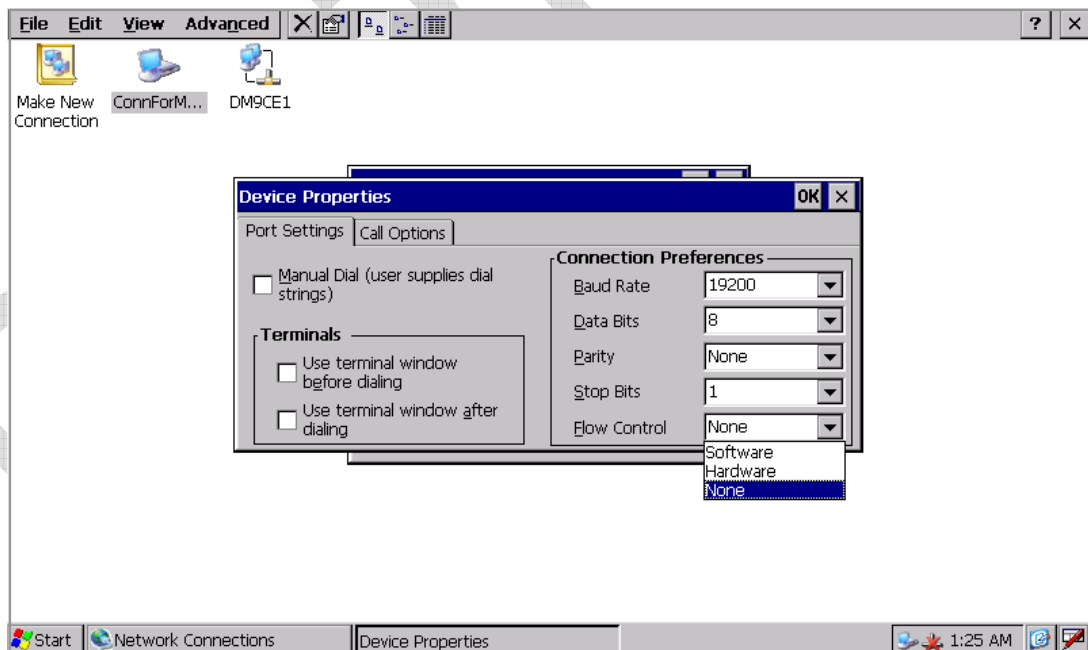


Figure 1.5: ActiveSync Serial Port connection Properties


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5. Host Workstation Configuration

Both ActiveSync v3.8 and the latest v4.5 release from Microsoft are supported by the UMR hardware and the development tool chains; Visual Studio and Embedded Visual C++. The ActiveSync installation on the host PC should be conducted with the USB or null-modem cable disconnected from the target.

5.1. ActiveSync Installation & Configuration Instructions

The ActiveSync tool can be downloaded from the Microsoft hyper-links found in Appendix A. The system hardware and software requirements for the AS application can be found in Appendix B. The application is installed on the host equipment under the regular Microsoft End-User License Agreement (EULA). The following instructions guide the user through the installation and configuration process:

- Select the language you wish to use from the dialogue list.
- Accept the licensing agreement (if required).
- Select 'Run this program from its current location' and click 'Ok'.
- Follow the instructions on the screen.
- **Note:** during the installation Windows Firewall exceptions are added to ensure relevant host TCP ports can be accessed.
- Once the installation is complete the ActiveSync icon  should appear in the taskbar.
- Right-hand click on the AS icon and left-hand click on the "Connection Settings...."
- According to which medium you are connecting through (COM1 or USB on the host workstation), activate the appropriate check box, as shown below in Figure 1.6 or 1.7 (according to the version of ActiveSync installed).

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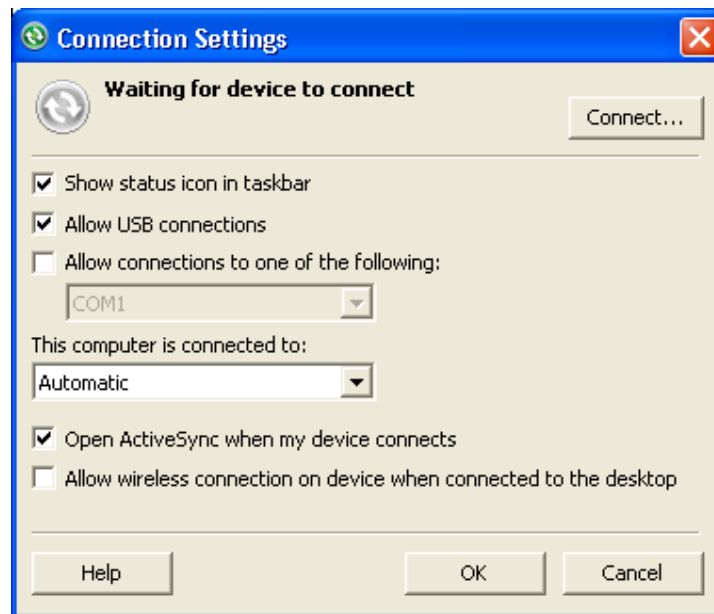


Figure 1.6: ActiveSync v.4.5 connection settings

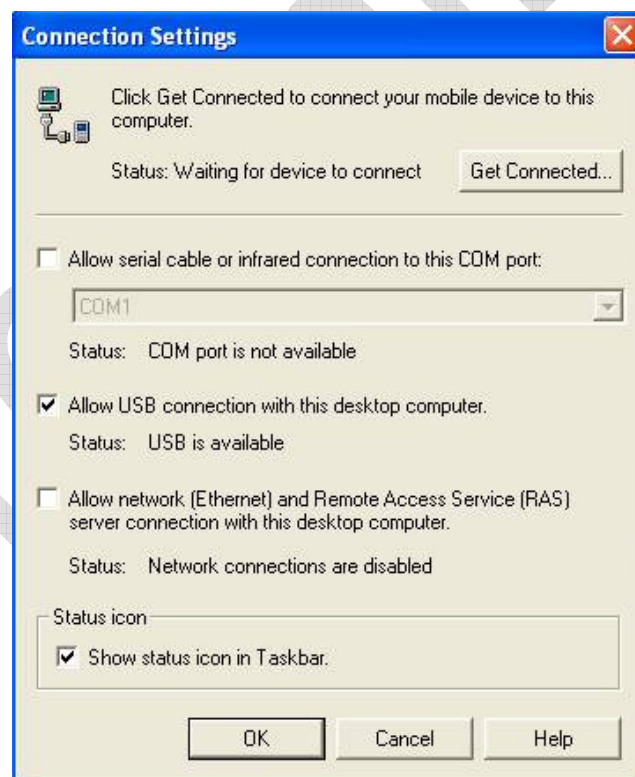


Figure 1.7: ActiveSync v.3.8 connection settings

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6. Synchronizing the target UMR to the host workstation

With the host workstation booted to the Windows operating system, apply power to the UMR via a dedicated power supply (12V (AED556) or 5V (AED553)) and boot the target WinCE operating system.

6.1. Communication Port Availability

To verify the intended USB or COM port of use is not occupied by another Windows application, make use of the ActiveSync 'Get Connected' tool; which is accessed through 'Connection Settings' and clicking the 'Connect...' button. This tool will then scan available communication ports on the host machine (COM, Ir, USB, etc) as shown in Figure 1.8 & 1.9 below.

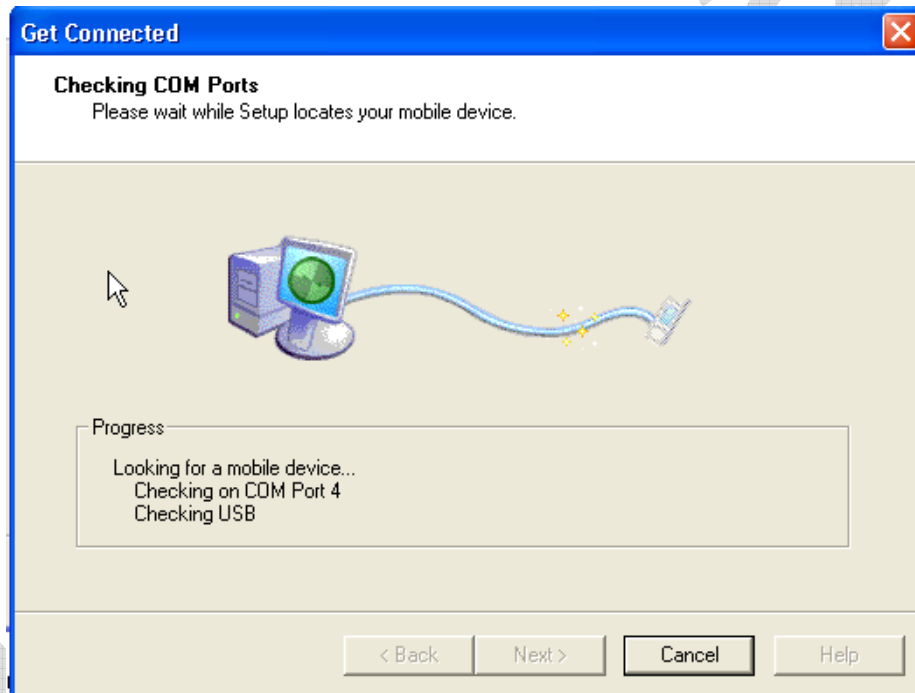


Figure 1.8: 'Get Connected' tool scanning communication ports

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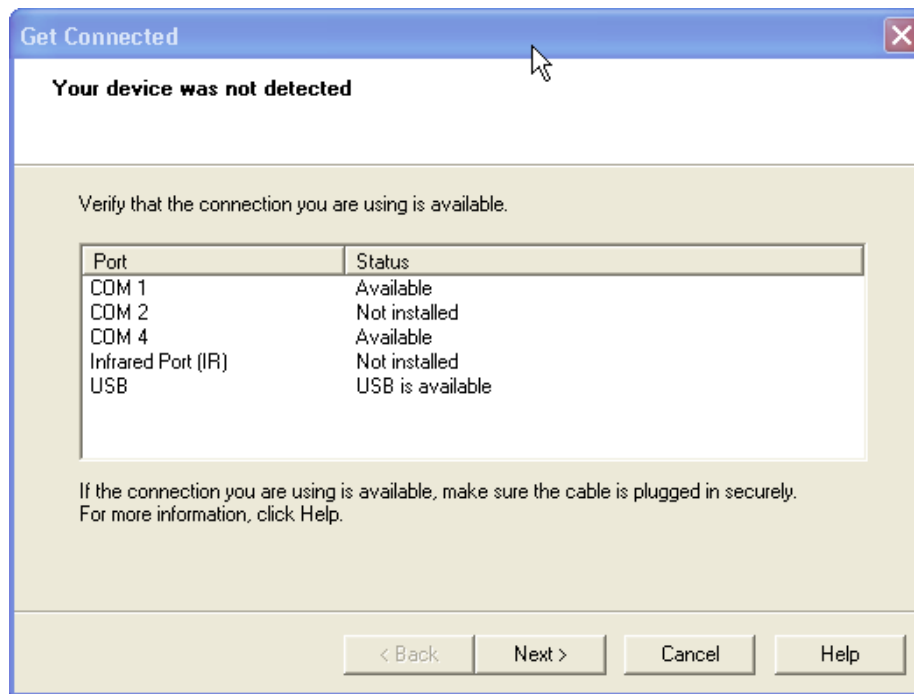



Figure 1.9: 'Get Connected' tool, establishing available host communication ports

Figure 1.9 determines that all installed serial communication and USB ports are available for use. Typical candidates for communication port occupation are; terminal emulators or applications which exercise USB ports from O/S start up, such as line-printer drivers.

If the user intends to use the USB port for synchronisation, attach the USB cable from an available host port (connected direct to the host motherboard, not via a USB hub or docking station) to the device port (P12) on the UMR. Similarly for serial asynchronous communication, attach the null-modem cable between the available host comms port to the COM1 port on the UMR.

6.2. Using the USB port

When the host (PC) and device (UMR) are connected, the workstation USB driver will recognise the new device and ActiveSync will connect the target automatically. Indication of target synchronisation is given by the turning wheel icon  in the taskbar. The user is then prompted to setup a partnership via a dialogue box, shown below in Figure 1.10.

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Figure 1.10: Partnership set-up

Unless the UMR is running an application which requires a partnership with programs such as Outlook or Exchange, then click 'No'. The user will then be permitted to freely navigate target file space via the host Windows Explorer or connect to the UMR via a recognised development environment (evC++ or Visual Studio). The host will then leave the 'Connected' dialogue box open on the host, as shown in figure 1.11.

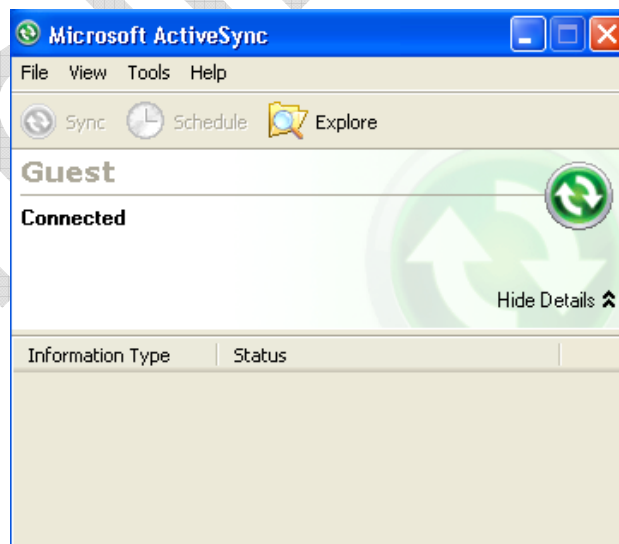


Figure 1.11: ActiveSync host indicating UMR Connection

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The 'Connected' box can be closed and the green ActiveSync wheel icon on the taskbar will indicate target connection status, as shown in Figure 1.12.




Figure 1.12: Green ActiveSync connected wheel icon

6.3. Using the Asynchronous Serial Port

Once the null-modem cable is attached to the UMR target, as per Section 6 initiate the 'Get Connected' tool to establish the connection. Again the connection dialogue box in Figure 1.10 & 1.11 will appear, similarly select 'No' to Set-Up Partnership and the UMR file space can then be readily browsed.

Once the host is connected to the target, the ActiveSync wheel should appear in green in the dialogue box and taskbar icon, as shown in Figure 1.11 & 1.12.

6.4. Target UMR ActiveSync Connection

On initiating the AS connection, the UMR will indicate host synchronisation via an on screen status message, as shown in Figure 1.13. The ActiveSync icon  will also appear in the taskbar.

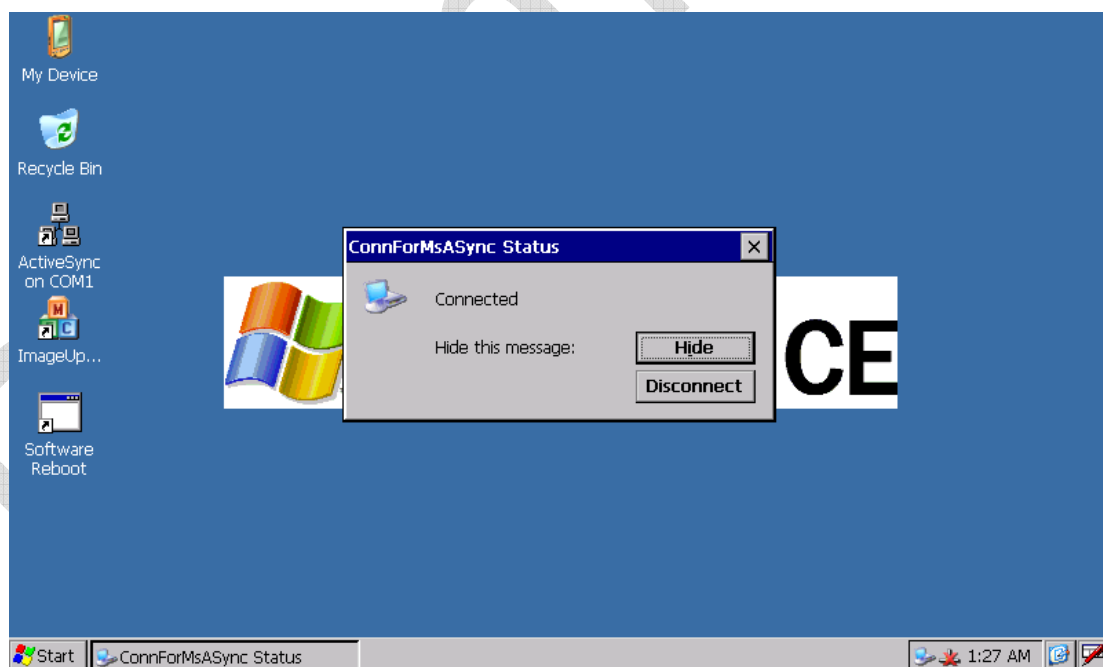


Figure 1.13: Target UMR ActiveSync status alert box.

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6.5. Target File Space Navigation

Target file space can be browsed and files manipulated via the host Windows Explorer under 'Mobile Devices', as shown in Figure 1.14.

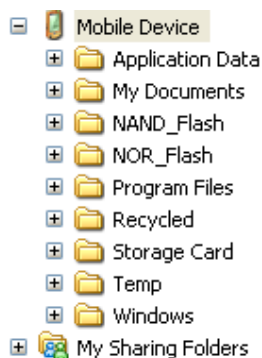


Figure 1.14: Navigating UMR file space on the host PC.

File transfer operations on the target are carried out as if the device is a locally mapped storage device. Note, that due to the WinCE O/S being executed in target SDRAM, any files copied to standard Windows directories such as 'My Documents' will be lost when the UMR is power cycled. For files which the user wishes to remain resident at power-off, non-volatile memory elements of the UMR need to be utilised for storage, such as NOR/NAND/SD Storage Card.

7. Trouble-shooting an ActiveSync connection

Use the following stepped process if you are using a USB cable to connect your device to the PC, and ActiveSync does not recognize the device or the program stops responding while connecting to ActiveSync.

1. Check the device for relevant system messages and address any conditions affecting the connection.
2. As shown in Figure 1.15, verify the ActiveSync process (wcescomm.exe) is running on the host PC under 'Task Manager'.

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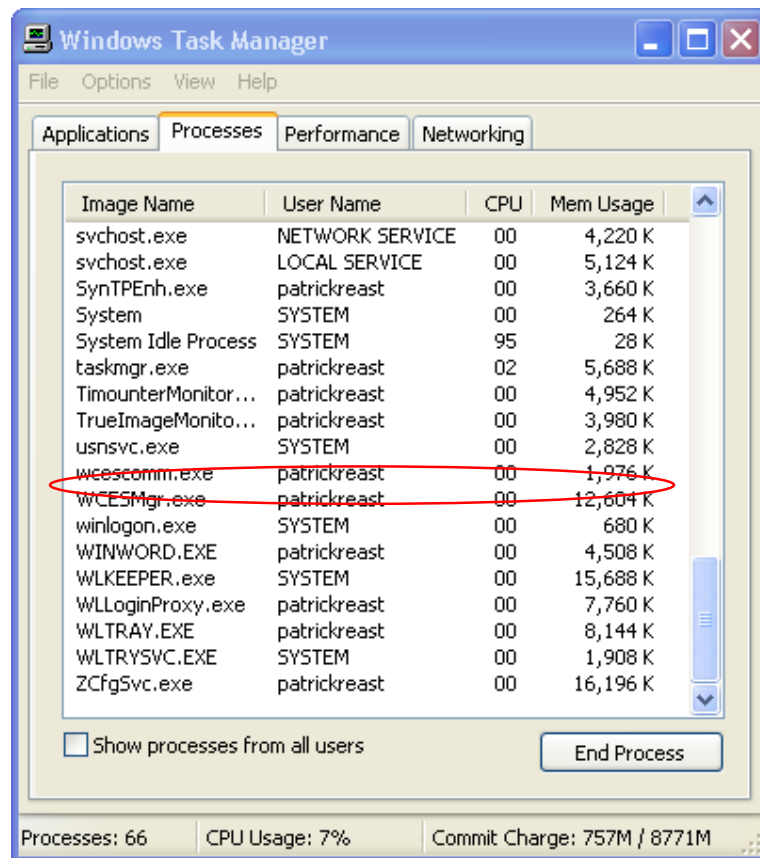


Figure 1.15: ActiveSync process in Host Task Manager

3. Confirm via the 'Device Manager' on the host workstation, that UMR device has been recognised as a USB WinCE device (Figure 1.16) and the associate driver file is 'wceusbsh.sys' (Figure 1.17).

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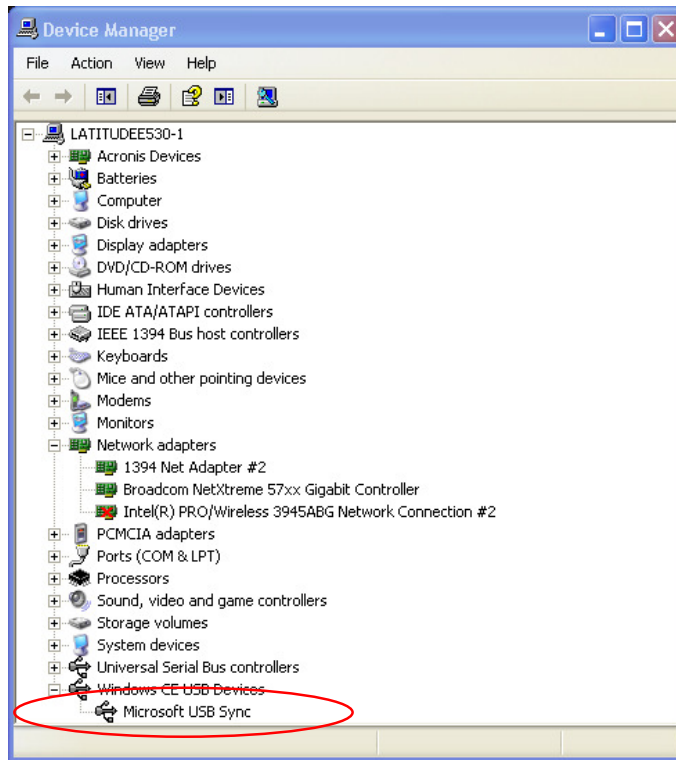


Figure 1.16: Windows CE USB Device listed under Device Manager

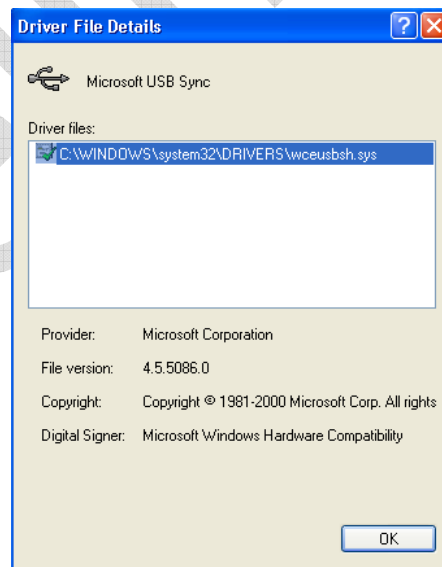


Figure 1.17: Host PC USB Driver

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4. Ensure that the device and the host PC both have USB connections enabled:
 - In ActiveSync on the host, under 'File' menu click 'Connection Settings' and then select the 'Allow USB connections' check box.
 - To manually activate ActiveSync on the target, click 'Start' > 'Network and Dial-Up Connections' and then double click the 'ConnForMsAsync' icon.
5. Disconnect and then reconnect USB cable from the device (UMR).
6. Disconnect the USB cable, restart the UMR, and then reconnect the USB cable to the device (UMR).
7. Disconnect the USB cable, restart the host PC, and then reconnect the USB cable to the device (UMR).
8. Perform the following:
 - Disconnect the USB cable from the device (UMR).
 - Open the following ports for all programs in the PC firewall:
 - 990 : open inbound TCP port
 - 999 : open inbound TCP port
 - 5678 : open inbound TCP port
 - 5679 : open outbound UDP port
 - 5721 : open inbound TCP port
 - 26675 : open inbound TCP port
 - Reconnect the USB cable to the device (UMR).
9. Deleting the contents of the 'CoreCon' folder on the Host PC may help invoke the ActiveSync connection (Note, this folder may not exist on all Host configurations).
 - Disconnect the USB cable from the device (UMR).
 - Delete the contents of the following folder on the Host PC:
C:\Documents and Settings\UserName\Local Settings\Application Data\Microsoft\CoreCon
 - Reconnect the USB cable to the device (UMR).
10. If the host PC uses a Wi-Fi connection to connect to a local area network, perform the following steps.
 - Disconnect the USB cable from the device (UMR).
 - Disable the wireless adapter via 'Network Connections' > 'Wireless Network Connection', as shown in Figure 1.18
 - Reconnect the USB cable to the device (UMR).

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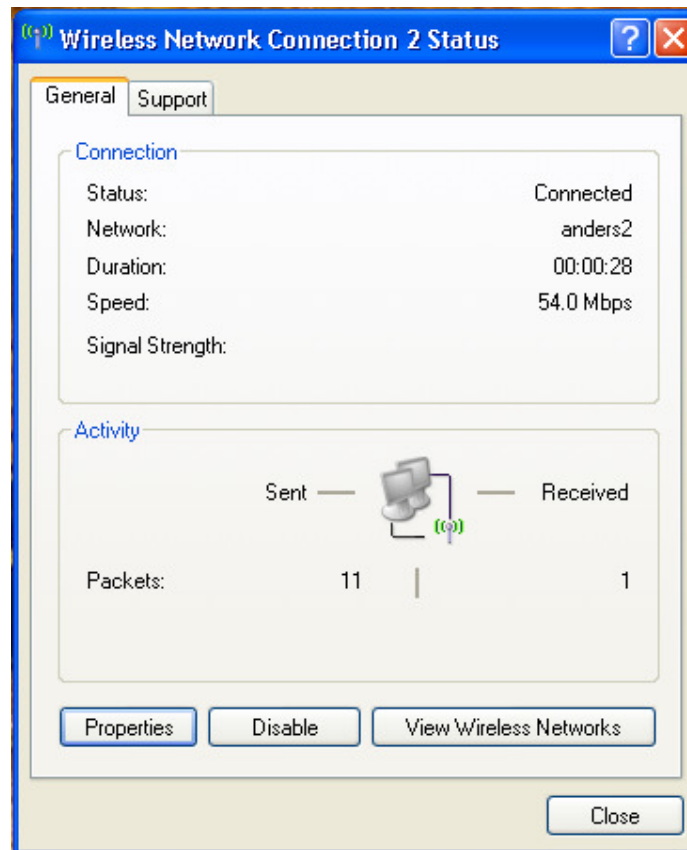


Figure 1.18: Disabling the Wi-Fi network adapter

11. Carry out the following procedure:

- Disconnect the USB cable from the device (UMR).
- Disable the antivirus program running on the host workstation.
- Reconnect the USB cable to the device (UMR).

12. Complete the following:

- Disconnect the USB cable from the device (UMR).
- Remove ActiveSync using Add/Remove Programs.
- Install ActiveSync.
- Reconnect the USB cable to the device (UMR).

13. Ensure that the DHCP Client service is running on the host PC. This can be established by checking the workstation IP address is assigned automatically. Under the network adapter properties, select 'Internet Protocol Properties' and then 'TCP/IP Properties', as shown in Figure 1.19. To confirm the

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IP address has then been allocated, execute 'ipconfig /all' at the command line DOS prompt. If DHCP client is active, the 'DHCP Server' field will be populated with a valid IP address.

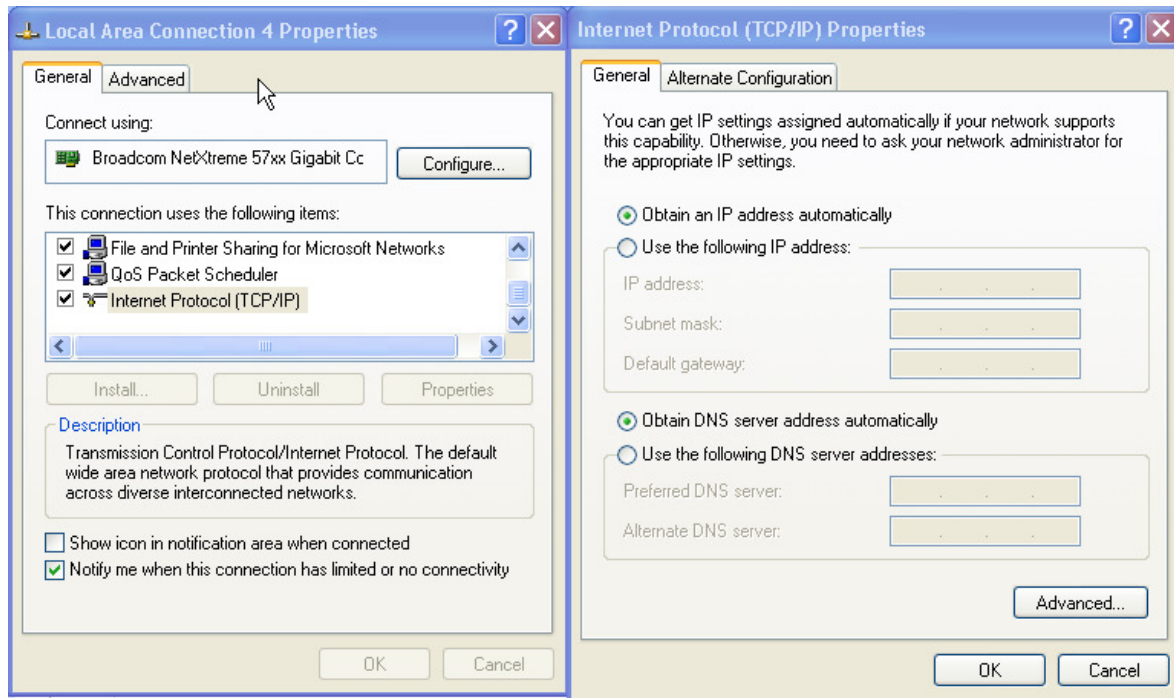


Figure 1.19: Workstation IP address configured to be allocated automatically

14. Follow the Microsoft AS trouble-shooting recommendations and registry tricks detailed in the hyperlinks listed Appendix A (4 & 5)
15. If the user is using ActiveSync v4.5 (not available on v3.8), the Trouble-shooting tool for ActiveSync can be used to scan the host PC and UMR device to identify connectivity problems. To kick-off the utility, double click the ActiveSync wheel in the host taskbar and under the 'Help' drop down menu, click 'Trouble-Shooter for ActiveSync'. Following the on screen instructions, where the host will attempt to repair problems automatically. The screen shot below in Figure 1.20 demonstrates the host trouble-shooter scan in progress.

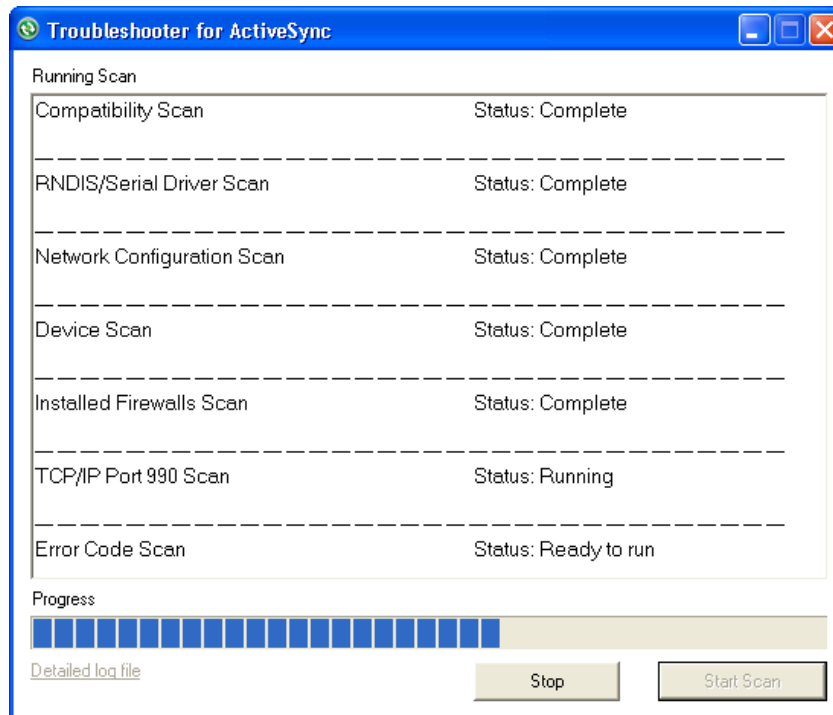


Figure 1.20: Host Trouble-shooter scan activity

16. If after following the above process, the ActiveSync connection with the UMR has not been established, please save the resulting trouble-shooter log file 'ASTULog.cab' and send it into Anders support team (umr-support@anders.co.uk) for further inspection. In addition to the trouble-shooter file, please submit the UMR 'infoviewer' log, which can be found in the target 'Control Panel' as shown in Figure 1.21.

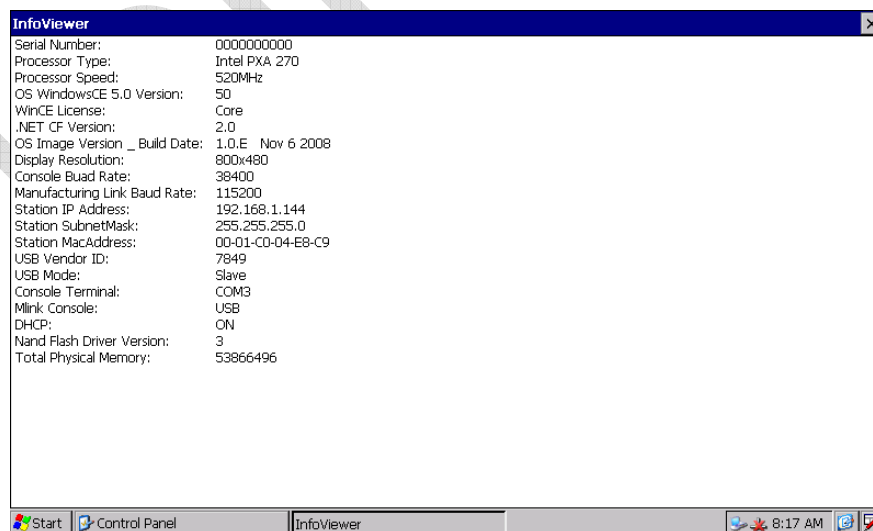


Figure 1.21: 'Infoviewer' log

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7.1. Common Issues related to Host/Target recognition

- If non-Microsoft firewall software is installed and running on your desktop PC, you might need to configure the software to allow the following ports in order for ActiveSync to function: 5678, 5679, 990, 26675, and 5721.
- Sometimes antivirus software that is installed on your desktop PC can conflict with ActiveSync functionality.
- In rare cases, some LAN configuration tools might also conflict with an ActiveSync connection. To enable your Windows Mobile-based device to successfully synchronize with your desktop PC, you might need to disable the LAN configuration tools.
- If you upgrade to Windows Media Player 10 after you have installed ActiveSync on your desktop PC, you must perform a repair installation of ActiveSync. This enables successful Media Synchronization to a Windows Mobile-based device.
- When a device is connected to a PC over an USB connection that goes through an external USB hub, you might experience connection instabilities such as drops in the connection, or an unresponsive desktop PC.
- If the desktop PC operating system is upgraded, or if a Service Pack is installed, you must perform a repair installation of ActiveSync in order to enable the expected ActiveSync functionality.
- If you upgrade from Windows XP SP1 to Windows XP SP2, you must add the Windows Firewall exceptions that are needed by ActiveSync.

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8. Appendices

A. Appendix: Windows Published Information & Useful links

1. Synchronising
<http://www.microsoft.com/windowsmobile/en-us/help/synchronize/default.mspx>
2. Downloading ActiveSync v.4.5
<http://www.microsoft.com/windowsmobile/en-us/help/synchronize/activesync-register.mspx>
3. Downloading ActiveSync v.3.8
<http://www.hpcfactor.com/support/syncsoft/activesync/>
4. Troubleshooting ActiveSync 4.5
<http://www.microsoft.com/windowsmobile/en-us/help/synchronize/activesync-usb.mspx>
5. Registry Tricks
<http://bevhoward.com/ASync.htm>

B. Appendix : Microsoft ActiveSync Host System Requirements

ActiveSync v3.8/v4.5 host operating systems compatibility

- Microsoft® Windows® 2000 Service Pack 4
- Microsoft® Windows® Server 2003 Service Pack 1
- Microsoft® Windows® Server 2003 IA64 Edition Service Pack 1
- Microsoft® Windows® Server 2003 x64 Edition Service Pack 1
- Microsoft® Windows® XP Professional Service Packs 1 and 2
- Microsoft® Windows® XP Home Service Packs 1 and 2
- Microsoft® Windows® XP Tablet PC Edition 2005
- Microsoft® Windows® XP Media Centre Edition 2005
- Microsoft® Windows® XP Professional x64 Edition
- Microsoft® Outlook® XP and Microsoft® Outlook® 2003 messaging and collaboration clients
- Microsoft® Office XP
- Microsoft® Office 2003
- Microsoft® Internet Explorer 6.0 or later (*required*)
- Microsoft® Systems Management Server 2.0

ActiveSync v3.8/v4.5 minimum host hardware requirements

- Minimum System Processor
 - 486 at 66 MHz or Higher for Windows 95 / 98 / NT 4 Service Pack 6 or above
 - Pentium 150 MHz or Higher for Windows Millennium
 - Pentium 166 MHz or Higher for Windows 2000
 - Pentium 233 MHz or Higher for Windows XP / Windows 2003 Server
- Minimum System Memory
 - 16 MB RAM for Windows 95 / 98 / NT 4

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- 32 MB RAM for Windows Millennium
 - 64 MB RAM for Windows 2000
 - 128 MB RAM for Windows XP / Windows 2003 Server
- 12 - 65 MB Hard Disk Space (Depending of Selected Components and current system configuration)
- Microsoft Internet Explorer 4.01 SP1 or Higher (Internet Explorer 6.0 SP1 recommended)
- 1 free 9 or 25 pin communications port for Sync Cable
- 256 Colour VGA compatible display adapter
- Keyboard & Pointing device
- Outlook 98 or later required for PIM synchronisation

ActiveSync Device compatibility

Device's OS	Use ActiveSync version
Windows CE 1	1.1 (Handheld PC Explorer)
Windows CE 2-5/Windows Mobile 2000-2003	3.8
Windows CE 3-6/Windows Mobile 2002-5.0	4.2
Windows CE 3-6/Windows Mobile 2002-6.1	4.5

OS compatibility

OS	Use ActiveSync version
Windows 9x, NT 4	3.8
Windows 2000, Windows XP (SP2 and earlier only), Windows Server 2003	3.8/4.5

C. Appendix : ActiveSync Release History

Version	Operating systems	Release date	Major changes
3.8	Windows 95, NT 4, 98, 2000, XP, 2003, Home Server	2005-01-06	Secure functionality and provide updates for Windows XP SP2 systems Performance improvements in synchronisation Circumvents XP Firewall prompts that users experienced with other program versions upon first run. Disables the Ethernet (LAN, Bluetooth) and RAS (Modem and WAN) connection method by default
4.0.4343	Windows 2000, XP, 2003, Home Server	2005	Users able to specify installation directory Removal of an personal area connectivity options from the synchronisation mix.

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			Services for connections with Microsoft SQL server are included, along with a synchronisation update for Windows Media Player 10 GUI refresh
4.0.4358		2005	Retail version included only on Windows Mobile 5 device CDs
4.1.0.4841		2005-11-18	Critical update
4.2.0.4876		2006-06-06	Microsoft Outlook improvements: Resolves issues relating to error code 85010014 Proxy/DTPT interaction improvements: Improved auto configuration of device Connection Manager settings when desktop has no proxy path to the Internet Improved Desktop Pass Thru behaviour with ISA proxy failures Partnership improvements: Better resolution of multiple devices with the same name syncing with the same desktop Connectivity improvements: Better handling of VPN clients (resolve unbinding of protocols from our RNDIS adapter). New auto detection of connectivity failure with user diagnostic alerts New troubleshooting utility
4.5.5096		2007-02-13	Faster file transfer speed and photo sync via Outlook are only available for Windows Mobile 5.0 powered devices. Customers using Microsoft Exchange 2003 Service Pack 2 with devices running the Messaging and Security Feature Pack for Windows Mobile 5.0 will benefit from the following feature enhancements included in ActiveSync 4.5: Direct Push Technology, local device wipe, and certificate powered authentication to Microsoft Exchange. Microsoft Office Outlook 2000 not supported Conversion of database files for use on a mobile device is not supported Conversion of font files for use on a mobile device is not supported by ActiveSync 4.5

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